

METHOD OF IMPROVING FIELD EMISSION EFFICIENCY FOR FABRICATING CARBON NANOTUBE FIELD EMITTERS

Abstract

A method of CNT field emission current density improvement performed by a taping process is disclosed. The method comprises following steps. First of all, a conductive pattern coated on a substrate by screen-printing a conductive slurry containing silver through a patterned screen is carried out. Thereafter, a CNT layer is attached thereon by screen-printing a CNT paste through a mesh pattern screen to form CNT image pixel array layer. The CNT paste consists of organic bonding agent, resin, silver powder, and carbon nano-tubes. After that the substrate is soft baked by an oven using a temperature of about 50-200 °C to remove volatile organic solvent. A higher temperature sintering process, for example 350-550 °C is then carried out to solidify the CNT on and electric coupled with the conductive pattern. Finally, an adhesive film is closely attached on the cathode substrate and then remove the adhesive film away so as to remove those badly bonding CNT portions and to vertically pull up a portion of CNT which originally laid down on the surface of CNT layer after sintering. Consequently, the current density, brightness, and uniformity of the emitter sources are significantly improved.